

## ABSTRACT

A phase-compensating cube corner retroreflector includes three rear reflecting surfaces. The first and the third rear reflecting surfaces can be coated with a phase-compensating film stack that induces  $2n\pi$  phase difference upon reflection, where  $n$  is an integer including 0. Alternatively, all three rear reflecting surfaces can be coated with a phase-compensating film stack that induces  $n\pi$  phase difference when handling linearly polarized light, or  $2n\pi$  phase difference when handling linearly or circularly polarized light. So coated, the phase-compensating cube corner preserves the polarization orientation and ellipticity of the incident light. Such a phase-compensating cube corner can be used to improve the accuracy of distance-measuring interferometers. The cube corner directs light to and from other optical elements, including a polarizing beam-splitters, mirrors, and quarter-wave plates.